



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,267	03/31/2006	Yandapalli Durga Prasad	27610173PUS1	9048

2292 7590 02/27/2009
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

STELLING, LUCAS A

ART UNIT	PAPER NUMBER
----------	--------------

1797

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

02/27/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<i>Office Action Summary</i>	Application No.	Applicant(s)	
	10/574,267	PRASAD, YANDAPALLI DURGA	
	Examiner	Art Unit	
	Lucas Stelling	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2008.
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,55-71 and 73-78 is/are pending in the application.
4a) Of the above claim(s) 60-67 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,55-59, 68-71, and 73-78 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 72-74 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. As to claim 72, it is unclear what the term "in nature" means. A person of ordinary skill in the art would not know to a reasonable degree whether any given location does or does not exist "in nature" for determining whether a virus is infective in it. For purposes of examination the scope of the claim will be to include any virus.
4. As to claim 73, it is unclear what is meant by the term "chemicals," "pesticides" and "biomolecules." These chemical genus terms do not clearly identify a set of species which would be known to a person of ordinary skill in the art to a reasonable degree.
5. As to claim 74, it is unclear what is meant by the terms "toxic metals" and "pesticides." All metals are toxic at a high enough concentration, and the term pesticide does not define a class of compounds to a reasonable degree such that a person of ordinary skill in the art would know whether any given compound is or is not a pesticide.
6. As to claim 74, it is unclear what is meant by "a toxic chemical gas." All chemical gasses are toxic to humans to the extent they completely displace breathable oxygen.
7. Claims 1 and 73 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,836,633 to Beschke ("Beschke").

Art Unit: 1797

8. As to claims 1, and 73 Beschke teaches a method for controlling microbes (col. 1 lines 18-21, antifouling is the process of controlling marine flora and fauna build-up on submerged objects and includes microbial fouling; see below. It is noted also that microbes are composed of biomolecules as required by claim 73), said method comprising contacting (col. 1 lines 15-21, microbes in the water will contact the exterior of the ship) the microbe with at least one functional transition metal silicate selected from the group consisting of:

(a) cupric silicates (col. 3 line 69 – col. 4 line 10, the Copper content of the silicate produce is 37.6% which means that the rest of the composition is 62.4% silica having a silica to copper ratio of 62.4:37.6 or 1:0.60) having a silica to copper ratio in the range of 1:0.34 to 1:5.15;

wherein said transition metal silicates are prepared by the process comprising the steps of

(i) adding a transition metal salt solution to a soluble alkali silicate solution to form a mixture;

(ii) forming a precipitate of a transition metal silicate; and

(iii) washing and drying the precipitate thus formed to obtain the transition metal silicate (for steps (i), (ii), and (iii) see col. 2 lines 25-50 and col. 2 line 68-- col. 3 line 10),

9. Claims 68- 71, and 74- 77 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Beschke.

Art Unit: 1797

10. As to claims 68- 71, microbes (e.g. bacteria, cryptosporidium, aspergillus sps, and viruses) of these types are routinely present in natural waters, and therefore it is implicit in the teaching of the reference that the anti-fouling copper silicate agent in Beschke will contact these microbes. Alternatively, it would be obvious to use the copper silicate of Beschke in instances when the ships hulls will come in contact with these enumerated microbes in order to prevent biofouling on the ship.

11. As to claims 74-77, contaminants of these types are routinely present in natural waters, and therefore it is implicit within the teaching of the reference that the copper silicate coating for ships will contact these contaminants (e.g.. arsenic, mercury, lead, toxic metals, pesticides, bio-molecules, trihalomethanes, semi-volatile and volatile organics, PCBs, and hydrocarbons). Alternatively, it would be obvious to use the copper silicate of Beschke on ship hulls in instances when they would come in contact with natural waters containing the contaminants (e.g. arsenic, mercury, lead, toxic metals, pesticides, bio-molecules, trihalomethanes, semi-volatile and volatile organics, PCBs, and hydrocarbons) in order to prevent biofouling on the ship.

Claim Rejections - 35 USC § 103

12. Claims 55-59, and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beschke in view of U.S. Patent No. 5,632,904 to Samad et al. ("Samad").

As to claims 55-59, each is drawn to a specific silica to copper ratio in the cupric silicate prepared under particular pH conditions. Beschke teaches that the copper content of the copper silicate produced in the Beschke method is adjustable (Beschke col. 2 lines 50-60). The copper adjustment is performed by adjusting the starting pH (col. 2 line

Art Unit: 1797

56), using an acid or base and then adding copper salt solution until the precipitation pH is reached (col. 2 line 58). It is within the understanding of a person of skill in the art that the biocidal power of biocidal copper agents is controlled by the available metal cations (Samad col. 1 lines 39-41). So the amount of copper in the agent is a result effective variable. And, it is within the understanding of a person of ordinary skill that the water chemistry in which the copper agent is to be used can reduce its effectiveness (Samad col. 1 lines 34-54). Therefore it would have been obvious to a person of ordinary skill in the art at the time of invention to optimize the silica to copper ratio in the adjustable copper silicate compound of Beschke by selecting either neutral, acidic, or extremely acidic pH conditions during production in order to provide an effective amount of copper in the anti-fouling coating for the ships based on the water chemistry in which they are to be used. *Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney (205 USPQ 215 (CCPA 1980)).*

13. The electron spin resonance and X-ray diffraction peaks are inherent properties of a particular crystal structure of a silicate that is obvious and, therefore, they need not be expressly shown in the prior art.

14. As to claim 78, Beschke teaches a method for controlling microbes (col. 1 lines 18-21, antifouling is the process of controlling marine flora and fauna build-up on submerged objects and includes microbial fouling; see below. It is noted also that microbes are composed of biomolecules as required by claim 73), said method comprising contacting (col. 1 lines 15-21, microbes in the water will contact

Art Unit: 1797

the exterior of the ship) the microbe with at least one functional transition metal silicate selected from the group consisting of:

(a) cupric silicates (col. 3 line 69 – col. 4 line 10, the Copper content of the silicate produce is 37.6% which means that the rest of the composition is 62.4% silica having a silica to copper ratio of 62.4:37.6 or 1:0.60) having a silica to copper ratio of 1:0.60;

wherein said transition metal silicates are prepared by the process comprising the steps of

(i) adding a transition metal salt solution to a soluble alkali silicate solution to form a mixture;

(ii) forming a precipitate of a transition metal silicate; and

(iii) washing and drying the precipitate thus formed to obtain the transition metal silicate (for steps (i), (ii), and (iii) see col. 2 lines 25-50 and col. 2 line 68-- col. 3 line 10),

As to the specific silica to copper ratios of claim 78. Beschke teaches that the copper content of the copper silicate produced in the Beschke method is adjustable (Beschke col. 2 lines 50-60). The copper adjustment is performed by adjusting the starting pH (col. 2 line 56), using an acid or base and then adding copper salt solution until the precipitation pH is reached (col. 2 line 58). It is within the understanding of a person of skill in the art that the biocidal power of biocidal copper agents is controlled by the available metal cations (Samad col. 1 lines 39-41). So the amount of copper in the agent is a result effective variable. And, Samad teaches that the water chemistry in

Art Unit: 1797

which the copper agent is to be used can reduce its effectiveness (Samad col. 1 lines 34-54). Therefore it would have been obvious to a person of ordinary skill in the art at the time of invention to select certain silica to copper ratio in the adjustable copper silicate compound of Beschke by selecting either neutral, acidic, or extremely acidic pH conditions during production in order to provide an effective amount of copper in the anti-fouling coating for the ships based on the water chemistry in which they are to be used. *Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney (205 USPQ 215 (CCPA 1980)).*

Response to Arguments

15. Applicant's arguments filed 12-02-08 have been fully considered but they are not persuasive.

16. Applicant's first argument is that the terms "chemicals," "pesticides," "biomolecules," toxic metals," and "a toxic chemical gas" are definite as required by 35 USC 112, second paragraph. Applicant argues that a person of ordinary skill in the art would have no difficulty understanding this aspect of Applicant's invention. In response, the test for definiteness under 112, second paragraph, is not whether a person of ordinary skill in the art understands the terms which applicant uses, but whether a person of ordinary skill in the art would be reasonably apprised, in light of applicant's disclosure, of the scope of the invention claimed. In this case, although the terms enumerated above have definite meanings, they do not reasonably convey with any particularity an identifiably class for which a person of ordinary skill in the art would

Art Unit: 1797

know to a reasonable degree whether any given substance is a member. They therefore render the claims indefinite. See MPEP 2171 and 2173.

17. Applicant's second argument is that the Beschke reference does not explicitly contemplate or discuss microbes. In response, Beschke is concerned with using the agent as a marine antifouling agent (See Beschke abstract). It is well known in the art that anti-fouling refers the process of controlling marine flora and fauna build-up on submerged objects and includes microbial fouling. As further evidence of this fact which was discussed in the prior action, see U.S. Patent No. 3,912,519 to Takagi et al. ("Tagaki"), in the abstract which teaches that the anti-fouling inhibits algae, barnacles, and tube worms. See MPEP 2131.01(II).

18. Applicant's third argument is that the examiner has mis-interpreted the data given in the table in Beschke. In particular applicant appears to argue that the residue on ignition and copper content should be added together because the sum is approximately equal to the mass of copper silicate obtained, and that therefore, the copper content listed in the table is not actually the percent of copper in the obtained copper silicate. In response, applicants attention is directed to Beschke at col. 4 line 4, in which the copper content of the copper silicate is listed as 37.6% (The term "do" in line 4 is an abbreviation for the word "ditto" meaning that line 4 is concerned with a percentage, based on col. 3 line 75 -- col. 4 line 2, this is the percentage contained in the obtained copper silicate). See also, as evidence the definition of "do" as an abbreviation in the Merriam-Webster online Dictionary.

Art Unit: 1797

19. Applicants fourth argument is that the prior art teaches that a pH of about 6 is essential to the precipitation of copper silicate. In response, this criticality in the prior art was not found, although a pH of 6 appears to be preferred. Instead Beschke teaches that the copper content of the precipitated copper silicate is adjustable (See Beschke col. 2 lines 50-60), and that this adjustment is made by adjusting the pH of the solution.

20. And with respect to applicants argument that the approach in Samad is different to applicants. In response, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1797

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Stelling whose telephone number is (571)270-3725. The examiner can normally be reached on Monday through Thursday 12:00PM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

las 2-18-09

/Matthew O Savage/
Primary Examiner, Art Unit 1797